MMS ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

Region: Alaska

Planning Area: Beaufort Sea

Title: Beaufort Sea Marine Fish Monitoring: Pilot Survey and Test of Hypotheses (AK-06-04)

MMS Information Needs to be Addressed: Fish resources are important in the Beaufort Sea ecosystem and to the coastal communities. Study information will be used in NEPA analysis and documentation for Beaufort Sea Lease Sales, EPs, and DPPs.

Total Cost: $997,000 **Period of Performance:** FY 2006-2009

Conducting Organization: NOAA-NMFS-AFSC

MMS Contact: Chief, Alaska Environmental Studies Section

Description:

Background A consistent Beaufort Sea fish monitoring study is needed to obtain fundamental and current fish resource information. Data at the most basic level, e.g., fish distribution data, are not only spotty but also outdated. Fish assemblages and populations in other marine ecosystems off Alaska have undergone observable regime-shifts in diversity and abundance over the last 20-30 years. While the same is likely true of the Beaufort Sea, it is unconfirmed because the scant distribution and abundance data available are pre regime-shift. Furthermore, the delineation of important marine mating, spawning, rearing, feeding and migration habitats (pre or post regime-shift), is simply non-existent.

In addition to the need for basic distribution data, ecological information is necessary to assess potential effects of offshore development. However, Beaufort Sea life history strategies, foraging, population dynamics and other aspects of marine fish behavior and ecology are, for the most part, unknown. Because MMS is the principle agency proposing federal actions in the Alaskan Beaufort Sea, it is unlikely that other sources of applicable information will become available.

This study will begin to establish baseline knowledge of fish distribution in the Beaufort leasing area and assess interannual variation through monitoring. Concurrent collection of salinity, temperature and plankton data can establish basic ecological facts.

Objectives

- Design a long-term fish monitoring plan for the Beaufort Sea OCS leasing area that includes ocean and lower trophic data essential to understanding fish dynamics.
- Implement the first survey covering 1/5th of the Beaufort Sea OCS (roughly a 40 by 130 mile area). Repeat at the appropriate interval in the remaining areas of the Beaufort Sea OCS to establish a long term monitoring baseline.

Methods

Phase I: Design
Review and adapt marine fish survey design methods to specific MMS information needs and Beaufort Sea conditions. Design survey methods for long-term comparability, cost-effectiveness and incorporation of future technological and remote sensing advances. Monitor demersal and pelagic fishes at all life history stages and across depths and habitats. Include active *in situ* fish sampling with concurrent collection of plankton and ocean conditions.

Phase II: Implementation

- Conduct the first survey based on results of the design phase. Analyze samples for basic ecological information. Summarize information on fish distribution, relative abundance, locations of critical or sensitive life history stage habitats, and trophic structure in GIS and report format. Provide intermediate results for NEPA analyses. Incorporate lessons learned into recommendations for the next 5-year survey in another section of the Beaufort Sea OCS.
- Archive environmental data and specimens to provide a cost effective means of future hypothesis testing by MMS and other agencies.

Current Status:

The study is underway and scheduled to conduct ship survey in Beaufort Sea, mid-August to mid-September 2008. The "Under-ice Sampling Workshop" was completed and in process of drafting workshop report.

Final Report Due: August 30, 2009.

Publications Completed: None

Affiliated WWW Sites: http://www.mms.gov/alaska/
http://www.afsc.noaa.gov/

Revised Date: March 2008